

1. An airbag inflator diffusion system, comprising:
an airbag inflator having an exhaust gas exit port; and
a sleeve shaped to receive the inflator securely within the sleeve, the sleeve expanding radially under a force of impinging exhaust gas, the sleeve comprising a structural stop to limit the radial expansion of the sleeve.
2. The inflator diffusion system of claim 1, wherein the structural stop comprises a tab and a perforation, such that the tab is shaped to engage the perforation upon radial expansion of the sleeve to limit expansion.
3. The inflator diffusion system of claim 1, wherein the structural stop comprises a hook and a perforation, such that the hook engages the perforation upon radial expansion of the sleeve to limit expansion.
4. The inflator diffusion system of claim 1, wherein a first longitudinal edge of the sleeve overlaps a second longitudinal edge along a length of the sleeve.
5. The inflator diffusion system of claim 4, wherein the first longitudinal edge is slidably movable with respect to the second longitudinal edge under the force of impinging exhaust gas.

6. The inflator diffusion system of claim 1, wherein a perforation in the sleeve becomes exposed upon radial expansion of the sleeve.

7. The inflator diffusion system of claim 6, wherein the perforation is positioned to allow exhaust gas to flow out of the sleeve through the perforation and into an inflatable cushion.

8. The inflator diffusion system of claim 6, wherein the perforation overlays a portion of the inflator excluding the exit port.

9. The inflator diffusion system of claim 1, wherein the inflator is an elongate inflator and the sleeve extends a length of the elongate inflator.

10. The inflator diffusion system of claim 1, wherein the structural stop allows the sleeve to expand radially a predetermined amount.

11. The inflator diffusion system of claim 1, wherein the sleeve is crimped adjacent opposing ends of the inflator to secure the inflator within the sleeve.

12. The inflator diffusion system of claim 1, wherein the radial expansion of the sleeve forms an exhaust passage between the sleeve and the inflator.

13. The inflator diffusion system of claim 12, wherein the sleeve comprises a solid section positioned to receive direct impingement of the exhaust gas from the exit port and direct the exhaust gas through the exhaust passage.

14. The inflator diffusion system of claim 1, wherein a cross-sectional shape of the sleeve is substantially the same as a cross-sectional shape of the inflator.

15. The inflator diffusion system of claim 1, wherein the sleeve has a mounting stud extending orthogonally therefrom.

16. An airbag inflator diffuser, comprising:

a sleeve having a first longitudinal edge that overlaps a second longitudinal edge along a length of the sleeve, the sleeve expanding radially under a force of impinging exhaust gas from an exit port of an inflator when installed within the sleeve; and

a structural stop to limit the radial expansion of the sleeve.

17. The diffuser of claim 16, wherein the structural stop allows the sleeve to expand radially a predetermined amount.

18. The diffuser of claim 17, wherein the structural stop comprises a tab and a perforation in the sleeve, such that the tab is shaped to engage the perforation upon radial expansion of the sleeve to limit expansion.

19. The diffuser of claim 17, wherein the structural stop comprises a hook and a perforation in the sleeve, such that the hook engages the perforation upon radial expansion of the sleeve to limit the expansion.

20. The diffuser of claim 18, wherein the perforation is adjacent the first longitudinal edge and the tab is adjacent the second longitudinal edge.

21. The diffuser of claim 20, wherein the first longitudinal edge is slidably movable with respect to the second longitudinal edge under the force of impinging exhaust gas.

22. The diffuser of claim 21, wherein the perforation becomes exposed upon radial expansion of the sleeve.

23. The diffuser of claim 22, wherein the perforation is positioned to allow exhaust gas to flow out of the sleeve through the perforation and into an inflatable cushion.

24. The diffuser of claim 23, wherein the perforation overlays a portion of the inflator excluding the exit port.

25. The diffuser of claim 24, wherein the radial expansion of the sleeve forms an exhaust passage between the sleeve and the inflator.

26. The diffuser of claim 25, wherein the sleeve comprises a solid section positioned to receive direct impingement of the exhaust gas from the exit port and direct the exhaust gas through the exhaust passage.

27. The diffuser of claim 17, wherein the sleeve is shaped to extend a length of an elongate inflator.

28. The diffuser of claim 27, wherein a cross-sectional shape of the sleeve is substantially the same as a cross-sectional shape of the inflator.

29. The diffuser of claim 16, wherein the sleeve has a mounting stud extending orthogonally therefrom.

30. An airbag inflator diffusion system, comprising:

an airbag inflator having an exhaust gas exit port; and

a sleeve having a first longitudinal edge that overlaps a second longitudinal edge along a length of the sleeve, the sleeve expanding radially to form an exhaust passage under a force of impinging exhaust gas from the exit port of the inflator installed within the sleeve, the sleeve having a perforation adjacent the first longitudinal edge and a tab adjacent the second longitudinal edge, such that the tab is shaped to engage the perforation upon radial expansion of the sleeve to limit expansion.

31. A method for fabricating an airbag inflator diffuser, comprising:
providing a rectangular blank of sheet metal having a first and second longitudinal edge;
forming one or more perforations adjacent the first longitudinal edge;
forming one or more tabs adjacent the second longitudinal edge directly opposite the perforations;
rolling the blank such that the first longitudinal edge overlaps the second longitudinal edge to form a substantially cylindrical sleeve; and
folding the one or more tabs through the one or more perforations.

32. The method of claim 31, wherein forming one or more perforations comprises stamping the blank in a die shaped to form one or more perforations along a length of the blank, such that the one or more perforations are positioned to overlay a portion of an inflator excluding an exit port when installed within the diffuser.

33. The method of claim 31, further comprising press fitting an inflator within the sleeve so that one or more exit ports on the inflator are covered by one or more solid sections of the sleeve.

34. The method of claim 33, further comprising crimping the sleeve after the inflator is inserted into the sleeve to limit axial movement of the inflator within the sleeve upon activation.